

Appl. No.: 09/937,897
Amendment dated November 14, 2003
Reply to Office Action of July 14, 2003



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TC 1700

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Oliver Lemmer et al.

Serial No.: 09/937,897

Filed: September 28, 2001

For: Diamond-Coated Tool And Process For
Producing Thereof

Atty. Docket No.: 000475.00004

Group Art Unit: 1775

Examiner: A. A. Turner

Confirmation No.: 5702

AMENDMENT

MAIL STOP NON-FEE AMENDMENT

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

In response to the Office Action mailed July 14, 2003, please amend the instant application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the Listing of Claims, which begins on page 4 of this paper.

Remarks/Arguments begin on page 8 of this paper.

Duplicate of #11/0

Amendments to the Specification:

After the first paragraph beginning at page 1, numbered lines 5-7 and before the second paragraph, lines 9-20, insert the following heading:

Background Of The Invention

After the second paragraph beginning at page 11, numbered lines 5-8, and before the second paragraph, numbered lines 10-15, insert the following heading:

Detailed Description Of The Invention

After the second paragraph beginning at Amended Sheet 3, numbered lines 13-19 and before the second paragraph, numbered lines 21-35 insert the following heading:

Summary Of The Invention

Please replace the third paragraph beginning at Amended Sheet 3, numbered lines 21-35, and continuing onto Amended Sheet 3a, lines 1-6 with the following amended paragraph:

~~The object is achieved by means of a tool having the features of Claim 1~~ [[.]] In context with the invention, the expression "tool" includes each component having a coating serving for abrasion resistance of the component. Examples of such a tool are cutting tools like mills, drills, twist drills, reamers, threaders, grinding tools, trueing tools and honing tools, forming / shaping tools like drawing tools, stamping tools and punching tools, and components of the above-mentioned kind like wear parts, fairlead bushes, lands, guide surfaces, slide faces, slide bearings and cutting faces. The most prominent examples are guide surfaces of twist drills, guide surfaces of reamers and cutting surfaces of inserts. The last-mentioned examples refer to the fact that in most tools the cutting components are combined with sliding surfaces defining the position of the blade, such that components are integral with the tool. In this connection, the smooth diamond layers are particularly advantageous, because they have a high hardness and a low coefficient of friction. The components may be mounted to a tool or made up by certain tool surfaces. In many cases, the tool coating includes a tool ~~egde~~ edge.

Please replace the paragraph beginning at Amended Sheet 8, numbered lines 34-35 and continuing onto Amended Sheet 9, line 1, with the following amended paragraph:

A method for producing a tool substrate coated with carbon ~~in accordance with Claim 9~~ is likewise the subject matter of the invention.

Please replace the paragraph beginning at Amended Sheet 9, numbered lines 3-9, with the following amended paragraph:

~~The essential~~ Certain process parameters for applying carbon layers with a high fraction of carbon in a diamond crystal structure are known. These include the feeding of a carbon carrier gas such as methane, and the feeding of molecular hydrogen, the setting of a suitable substrate temperature and the coating period over which, first and foremost, the thickness of the carbon layers is set.

Please replace the paragraph beginning at Amended Sheet 9, numbered lines 11-15, with the following amended paragraph:

The process conditions for applying the first carbon layer for a fraction of carbon with a diamond crystal structure which is as high as possible are preferably optimized in a process step a). This produces the known diamond coatings for components which exhibit excellent wear resistance.

Please replace the paragraph beginning at Amended Sheet 9, numbered lines 16-18, with the following amended paragraph:

In ~~step b)~~ another process step, the process conditions of the above-mentioned step a) are preferably changed in order to reduce the fraction of carbon with a diamond crystal structure by contrast with the first layer.

Before the first paragraph beginning at Amended Sheet 10, numbered lines 1-2, insert the following heading:

Brief Description Of The Figures

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): Coated tool[[,]] ~~in-particular~~ for machining, ~~having~~ said coated tool comprising a substrate[[,]] ~~which has~~ having a predetermined coefficient of thermal expansion, a first carbon layer which is deposited on the substrate, ~~which~~ said first carbon layer has a predetermined highly predominant fraction of 80-100% of carbon with a diamond crystal structure and a coefficient of thermal expansion which is smaller than the coefficient of thermal expansion of the substrate; and at least one second carbon layer (~~B~~), which is deposited and spaced from ~~further outside with reference to the substrate (M) than~~ by at least the first carbon layer (A), ~~and in the case of which the~~ wherein said second carbon layer has a fraction of carbon with a ~~crystal~~ diamond crystal structure ~~is highly predominant~~ which is 80-100% but lower than the predetermined fraction of carbon with a crystal diamond structure in the first carbon layer (A), ~~and in the case of which the~~ wherein said second carbon layer has a coefficient of thermal expansion that is greater than the coefficient of thermal expansion of the first carbon layer, and said (A), ~~characterized in that the~~ second carbon layer ~~includes~~ consists of nano-crystalline diamond.

Claim 2. Cancelled.

Claim 3. (Currently Amended) Tool according to Claim 1[[,]] ~~characterized in that~~ wherein the second carbon layer (B) is deposited directly on the first carbon layer (A).

Claim 4. (Currently Amended) Tool according to Claim 1~~[[,]]~~ ~~characterized in that formed~~
further comprising an interlayer positioned between the first carbon layer (A) and the second
carbon layer (B) ~~is an interlayer in the case of which, and wherein~~ the fraction of carbon with a
diamond crystal structure drops continuously from the first carbon layer (A) in the direction of
the second carbon layer (B).

Claim 5. (Currently Amended) Tool according to Claim 1~~[[,]]~~ ~~characterized in that it has an~~
wherein an overall thickness of the first carbon layer (A) and the second carbon layer (B) ~~in the~~
~~range from~~ is about 1 to 40 μm .

Claim 6. (Currently Amended) Tool according to Claim 5~~[[,]]~~ ~~characterized in that it has an~~
overall thickness of the first carbon layer (A) and the second carbon layer (B) ~~in the range of~~ is
about 4 to 20 μm .

Claim 7. (Currently Amended) Tool according to Claim 6~~[[,]]~~ ~~characterized in that an~~ wherein
the overall thickness of the first carbon layer (A) and of the second carbon layer (B) ~~in the range~~
~~of is about~~ 6 to 15 μm ~~is formed~~.

Claim 8. (Currently Amended) Tool according to Claim 1~~[[,]]~~ ~~characterized in that~~ wherein the
second carbon layer (B) has a minimum thickness of 0.5 μm .

Claim 9. (Currently Amended) Tool according to ~~one of Claims 8,~~ ~~characterized in that further~~
~~material layers are~~ claim 8 further comprising at least one layer of a material arranged between
the first carbon layer and the second carbon layer.

Claim 10. (Currently Amended) Tool according to Claim 1, ~~characterized in that with reference~~
~~to the substrate beyond the second carbon layer further material~~ further comprising at least one

layer of a material spaced from said substrate by at least said second carbon layer ~~layers are~~
arranged.

Claim 11. (Currently Amended) Process for producing a tool substrate which is coated with carbon and has a predetermined coefficient of thermal expansion, said process comprising the steps of having the following steps:

- a) depositing a first carbon layer onto the tool substrate ~~(M)~~ ~~a first carbon layer (A)~~ ~~[[,]]~~
~~the~~ and selecting process conditions ~~being selected~~ such that the first carbon layer (A)
contains a predetermined highly predominant fraction of carbon with a diamond
crystal structure and has a smaller coefficient of thermal expansion than the tool
substrate ~~(M)~~; and
- b) depositing a second carbon layer such that at least said first carbon layer separates
said second carbon layer and said substrate (B), ~~which lies further outside with~~
~~reference to the substrate (M) than the first carbon layer (A)~~ ~~[[,]]~~ ~~the~~ and selecting
process conditions ~~being selected~~ in such a way that ~~by contrast with the~~
~~predetermined fraction of carbon with a diamond crystal structure of the first carbon~~
~~layer (A)~~ the second carbon layer ~~(B)~~ has a highly predominant but reduced
proportion of carbon with a diamond crystal structure relative to the predetermined
fraction of carbon with a diamond structure of the first layer, ~~and~~ a larger coefficient
of thermal expansion ~~that~~ than the first carbon layer (A) and consists of nano-
crystalline diamond.

Claim 12. (Currently Amended) Process according to Claim 11, wherein ~~in which~~ in step a) the
process conditions are selected such that the first carbon layer (A) has a high as possible a
fraction of carbon with diamond crystal structure.

Claim 13. (Currently Amended) Process according to Claim 11[[,]] wherein ~~in which~~ in step b) the process conditions of step a) are changed to reduce the fraction of carbon with a diamond crystal structure by comparison with the first carbon layer (A).

Claim 14. (Currently Amended) Process according to Claim 12[[,]] wherein ~~in which~~ in step b) the process conditions of step a) are changed to reduce the fraction of carbon with a diamond crystal structure by comparison with the first carbon layer (A).

Claim 15. (Currently Amended) Tool according to Claim 2[[,]] wherein ~~characterized in that~~ the second carbon layer (B) is deposited directly on the first carbon layer (A).

Claim 16. (Currently Amended) Tool according to Claim 2[[,]] ~~characterized in that formed further comprising an interlayer positioned between the first carbon layer (A) and the second carbon layer (B) is an interlayer in the case of which, and wherein~~ the fraction of carbon with a diamond crystal structure drops continuously from the first carbon layer (A) in the direction of the second carbon layer (B).

Claim 17. (Currently Amended) Tool according to Claim 2[[,]] ~~characterized in that it has an wherein an~~ overall thickness of the first carbon layer (A) and the second carbon layer (B) ~~in the range from~~ is about 1 to 40 μm .

Claim 18. (Currently Amended) Tool according to Claim 3 ~~characterized in that it has an wherein an~~ overall thickness of the first carbon layer (A) and the second carbon layer (B) ~~in the range from~~ is about 1 to 40 μm .

Claim 19. (Currently Amended) Tool according to Claim 2[[,]] ~~characterized in that~~ wherein the second carbon layer (B) has a minimum thickness of 0.5 μm .

Claim 20. (Currently Amended) Tool according to Claim 3[[,]] ~~characterized in that~~ wherein the second carbon (B) has a minimum thickness of 0.5 μm .

REMARKS/ARGUMENTS

The Office Action of July 14, 2003 has been reviewed and considered. In the Office Action, claims 1-20 were rejected under 35 U.S.C. §102. Claims 9 and 10 were also rejected under 35 U.S.C. §112, second paragraph.

Claims 1 and 3-20 have been amended. Claim 2 has been cancelled. Claims 1 and 3-20 remain pending. Reconsideration of the application is requested.

Claims 9 and 10 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claim 9 has been amended to more clearly recite that the tool can include at least one layer of material between the carbon layers. Claim 10 has been amended to more clearly recite that the tool can include a layer of material that is spaced from the substrate by at least the second carbon layer. Support for these amendments is found, at least, on page 6 of the original specification. No new matter has been added. Withdrawal of the rejection is requested.

An aspect of the present invention includes a coated tool used for machining. The coated tool comprises a substrate that has a predetermined coefficient of thermal expansion. The coated tool also comprises a first carbon layer deposited on the substrate and a second carbon layer deposited so that it is spaced from the substrate by at least the first carbon layer. The first carbon layer has a predetermined highly predominant fraction of 80-100% of carbon with a diamond crystal structure and a coefficient of thermal expansion which is smaller than the coefficient of thermal expansion of the substrate. The second carbon layer has a fraction of carbon with a diamond crystal structure that is 80-100% but lower than the predetermined fraction of carbon with a crystal diamond structure in the first carbon layer. Additionally, the second carbon layer

(1) has a coefficient of thermal expansion that is greater than the coefficient of thermal expansion of the first carbon layer, and (2) consists of nano-crystalline diamond.

The second, outside carbon layer has a lower fraction of carbon, because it consists of nano-crystalline diamond (the lower fraction of carbon is due to the increased influence of grain boundaries as the grains get smaller, as explained on page 16, third paragraph of the original specification). The second, outer layer has a greater coefficient of thermal expansion. Also, by this construction, improved adhesion is achieved by the additional compressive stress exerted by the second carbon layer (as explained on page 5, second paragraph of the original specification).

Claims 1-3, 5-8, 11-13, 15 and 17-20 have been rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,063,149 to Zimmer. The patent to Zimmer relates to diamond coatings for wear tools and parts. The patent discloses controlled process conditions that are intended to produce polycrystalline coatings having progressively finer grain size in the direction of the outer surface. For example, the Zimmer patent states, "the first region then transitions into a graded layer of polycrystalline diamond wherein the diamond grains become progressively smaller towards the outer surface" (column 3, lines 44-47). The only reference to the specific size of diamond crystallites is "substantially less than 3 microns." (column 3, line 48).

While the patent to Zimmer teaches to first apply a "conventional" layer of polycrystalline diamond, it clearly does not disclose applying a diamond coating with nano-crystalline diamond. Therefore, the patent to Zimmer does not teach applying a "second" carbon layer consisting of nano-crystalline diamond. Similarly, the patent to Zimmer does not teach to provide a separate layer, consisting completely of nano-crystalline diamond. As explained in the

specification of the Zimmer Patent and shown in corresponding Figure 2, the proposed "graded grain size diamond layer" transitions from large crystallites (grains) to smaller crystallites. This transition has no clear distinction between layers, but instead, is continuous. Therefore, the diamond coating disclosed in the patent to Zimmer is quite different from the diamond coating recited in amended claim 1.

As discussed, the patent to Zimmer clearly fails to disclose a second layer consisting completely of nano-crystalline diamond. As is well settled, a publication cannot anticipate a claim if it does not teach each and every element recited in the pending claim. Therefore, the patent cannot anticipate the pending claims because it fails to teach all that is recited in the pending claims. Withdrawal of the rejection is requested.

Claims 1-9 and 11-20 have been rejected under 35 U.S.C. §102(e) as being anticipated by EPO Publication No. EP 0 752 293 to NGK Spark Plug Co. (NGK); EPO Publication No. EP 0 596 619 to Crystallume; or Japanese Publication No. JP 04 223806 to Mitsubishi Materials (Mitsubishi).

PUBLICATION TO NGK

The publication to NGK discloses a diamond coated article and a method of forming the article. The publication also discloses that the article can include multiple poly-crystalline diamond film layers. Each of these layers is disclosed to have a thickness of between 6 to 13 μm . Neither of the layers consists of nano-crystalline diamond as recited in claim 1. Additionally, the publication fails to disclose (1) the fraction of carbon percentages and (2) the relative coefficients of thermal expansion recited in the pending claims. As a result the

publication to NGK cannot anticipate the pending claims because, as discussed, it does not disclose all that is recited in the pending claims. Withdrawal of the rejection is requested.

PUBLICATION TO CRYSTALLUME

The publication to Crystallume discloses a diamond coated article with an integral wearout indicator. The diamond coated article comprises first and second layers of an electrically-conductive diamond layer. The first diamond layer is disclosed to have a thickness between 2 microns and 5 microns. The second diamond layer is disclosed to have a thickness between 20 microns and 30 microns. Like the NGK publication, the Crystallume publication does not disclose that the second layer consists of nano-crystalline diamond as recited in the pending claims. Also, the publication fails to disclose (1) the fraction of carbon percentages and (2) the relative coefficients of thermal expansion recited in the pending claims. As a result the publication to Crystallume cannot anticipate the pending claims because, as discussed, it does not disclose all that is recited in the pending claims. Withdrawal of the rejection is requested.

PUBLICATION TO MITSUBISHI

The like above-discussed publications, the publication to Mitsubishi fails to anticipate the pending claims. The publication to Mitsubishi discloses two layers of diamond coating. It does not recite that either of these layers consists entirely of nano-crystalline diamond. Therefore, the publication cannot disclose that the second layer, which is spaced from the substrate, consists of nano-crystalline diamond as recited.

Additionally, the publication fails to disclose the recited fraction of carbon with crystal diamond structure of the first layer. Moreover, the publication does not disclose that the first

carbon layer has a coefficient of thermal expansion that is less than the coefficient of thermal expansion of the substrate. Similarly, the publication to Mitsubishi fails to disclose that the second carbon layer (1) has a fraction of carbon that is 80-100%, but lower than that of the first carbon layer; and (2) has a coefficient of thermal expansion that is greater than the coefficient of thermal expansion of the first carbon layer. Therefore, the publication fails to disclose all that is recited in the pending claims and, thus, cannot anticipate the pending claims. Withdrawal of the rejection is requested.

Claims 1-20 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,139,372 to Tanabe et al.

The patent to Tanabe discloses a polycrystalline diamond tool that includes a plurality of diamond layers that provide the tool with a non-uniform quality along its thickness. The layers include diamond having a diameter of at least 10 μm . Therefore, the diamond layers disclosed by Tanabe are not formed so that that a second layer consists of nano-crystalline diamond. Additionally, the patent to Tanabe fails to expressly disclose the recited fraction of carbon percentages and the recited relative thermal expansions. As a result, the patent to Tanabe cannot disclose the tool recited in claim 1, the method recited in claim 11 or any of the dependent claims. Withdrawal of the rejection is requested.

Claims 1-3, 5-8, 11-13, 15 and 17-20 have been rejected under 35 U.S.C. §102(b) as being anticipated by Japanese Publication No. JP 05 023993 to Mitsubishi Materials (Mitsubishi). The publication to Mitsubishi layers of diamond coating. It does not disclose a first layer that includes the recited fraction of carbon with crystal diamond structure. Also, it clearly does not disclose that the first carbon layer has a coefficient of thermal expansion that is

less than the coefficient of thermal expansion of the substrate. Further, the publication fails to disclose a second carbon layer that (1) has a fraction of carbon that is 80-100%, but lower than that of the first carbon layer; (2) has a coefficient of thermal expansion that is greater than the coefficient of thermal expansion of the first carbon layer; and (3) consists of nano-crystalline diamond.

As is well settled, a publication cannot anticipate a claim if it does not teach each and every element recited in the pending claim. Therefore, since the publication to Mitsubishi fails to disclose the above-discussed recitations of the pending claims, it cannot anticipate the claims. Hence, withdrawal of the rejections is requested.

The Office Action submits that the recited relative thermal expansion of the substrate and the two carbon layers is thought to be inherent. Applicants submit that without some showing of why the recited thermal expansions are inherent, a prima facie case of anticipation has not been, and cannot be, set forth. If the above rejections are maintained, evidence as to why the relative thermal expansions are inherent is required.

For all of the above-discussed reasons, Applicants respectfully submit that claims 1 and 3-20 are allowable and that the application is now in condition for allowance. A notice to this effect is earnestly solicited.

If any questions or issues remain, the resolution of which the Examiner feels would be advanced by a conference with Applicants' attorney, the Examiner is invited to contact Applicants' attorney at the number noted below.

Appln. No.: 09/937,897
Amendment dated November 14, 2003
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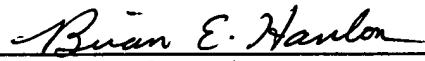
If any fees are required with this submission, the Commissioner is authorized to charge such fees to deposit account No. 19-0733.

Respectfully submitted,

BANNER & WITCOFF, LTD.

Dated: November 14, 2003

By:



Brian E. Hanlon

Registration No. 40,449

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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional)
000475.00004



In re Application of Oliver Lemmer et al.

Application Number 09/937,897

Filed September 28, 2001

For Diamond-Coated Tool And Process For Producing Thereof

Art Unit
1775

Examiner
A. A. Turner

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and appropriate non-small-entity fee are as follows (check time period desired):

- ☒ One month (37 CFR 1.17(a)(1)) \$110
☐ Two months (37 CFR 1.17(a)(2)) \$
☐ Three months (37 CFR 1.17(a)(3)) \$
☐ Four months (37 CFR 1.17(a)(4)) \$
☐ Five months (37 CFR 1.17(a)(5)) \$

- ☒ Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee amount shown above is reduced by one-half, and the resulting fee is: \$ 55 .
☐ A check in the amount of the fee is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director has already been authorized to charge fees in this application to a Deposit Account.
☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 19-0733 .
I have enclosed a duplicate copy of this sheet.

I am the ☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71

Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☒ attorney or agent of record.

☐ attorney or agent under 37 CFR 1.34(a).

Registration number if acting under 37 CFR 1.34(a). _____ .

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

11/14/03
Date

202-824-3000

Telephone Number

Brian E. Hanlon
Signature

Brian E. Hanlon-Reg. No. 40,449

Typed or printed name

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) \$55.0

Complete if Known

Application Number 09/937,897
 Filing Date September 28, 2001
 First Named Inventor Oliver Lemmer et al.
 Examiner Name A. A. Turner
 Art Unit 1775
 Attorney Docket No. 000475.00004

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit card ☐ Money ☐ Other ☐ None
 Order

☒ Deposit Account:Deposit
Account
Number

19-0733

Deposit
Account
Name

Banner & Witcoff, LTD.

The Director is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Credit any overpayments
☐ Charge any additional fee(s) during the pendency of this application
☐ Charge fee(s) indicated below, except for the filing fee
 to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1)					(\$ 0)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

	Extra Claims	Fee from below	Fee Paid
Total Claims	0	X	0
Independent Claims	0	X	0
Multiple Dependent		X	0

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$ 0)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	\$55
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17 (q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ \$55.00)

SUBMITTED BY

Complete (if applicable)

Name (Print/Type) Brian E. Hanlon Registration No. (Attorney/Agent) 40,449 Telephone 202-824-3000
 Signature *Brian E. Hanlon* Date 11/14/03

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This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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